COMPUTER NETWORK

SOLUTIONS

1. Suppose 'A' and 'B' are on same 10Mbps Ethernet segment and the propagation delay between two nodes is 275 bit times. Suppose A and B are on two ends of the wire and tries to send a frame at time t=0 and frames collide. Then at what time (in bits) they finish transmitting a jam signal. Assume 48 bit jam signal.

   A. 598 B. 323 C. 502 D. 227

   Solution: Option A

   The collision will be detected after 2*Tp and then a 48 bit delay will be involved for the jamming signal.

   (2*275)+48 = 598

2. Suppose each station in IEEE 802.5 with 1bit delay is 48m apart from its neighbouring stations. Token is of 3 Bytes and propagation delay is 2.4 * 108 m/sec. To avoid overlapping in the 4Mbps token ring in the monitor must insert 15 bits of artificial delay into ring. How many stations are there in the ring?

   A. 2 B. 3 C. 4 D. 5

   Solution: Option D

Common Data Questions: Q.3 and Q.4

3. A group of N stations share 100 Kbps slotted ALOHA channel. Each station output, a 500 bits frame on an average of 5000 ms; even if previous one has not been sent. What is the required value of N?

   Solution: 368

4. What if Pure ALOHA channel is used in previous question instead of slotted ALOHA?

   Solution: 184

5. Consider a MAN with server and destination of 20 km apart and one way delay is 2 minutes. At what data rate does RTT equals to transmission delay for 2 KB data?

   A. 41 bits/ sec B. 68.2 bps C. 69 bps D. 40 bps

   Solution: Option B

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Data Linked Type Question: Q.6 and Q.7

6. A 3000 km long trunk operates at 1.536 Mbps and it is used to transmit 64 Bytes frames. If it uses sliding window protocol then what is the number required sequence numbers. Assume propagation speed of 8 microsec/ km?

A. 63 B. 110 C. 123 D. 145

Solution: Option D

7. What is the number of sequence bits used in above question (Number of bits used for sequence number) ?

Solution: 8

8. A system with redundant bridges might have a problem with_____ in the system.
A. Loops B. Flooding C. Filters D. All of the above

Solution: Option A

9. Let bandwidth of a token ring is 4 Mbps and THT be 15ms. What is the maximum frame size and maximum payload size?

Solution: 7500, 7479 Bytes

10. Length of a 16 Mbps token ring network is 1000 meters. Speed of propagation in cable is 60% of the speed of light. Each station holds token for 5 µsec. How long does it take for a 3 Byte token to go around the ring? (The number of stations in ring = 20)
A. 1.36 µsec B. 5.56 µsec C. $1.36*10^{-4}$ sec D. $1.06*10^{-4}$ sec

Solution: Option D

11. If bandwidth of a ring is 4 Mbps, length of the token is 24 bits, speed of light is 60% of the speed of light. Find the minimum length of the cable in the token ring with no other delay?
A. 980 mtr B. 1800 mtr C. 1080 mtr D. 1100 mtr

Solution: Option C

12. If we have only 600 mtr wire, then how much delay should be introduced in bit time in previous question so that token ring operates correctly.

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A. 9 bits B. 11 bits C. 26 bits D. 12 bits

Solution: Option B

13. Consider a 10 Mbps token LAN with a ring latency of 400 μsec. A host need to transmit, seizes the token, then it sends a frame of 1000 Bytes. Removes the frame after it has circulated all around the ring and finally releases the token. This process is repeated for every frame. Assuming that only a single host wishes to transmit, the effective data rate?

Solution: 5 Mbps

14. What is the primary purpose of ARP?
A. Translate URLs to IP Address.
B. Resolve IPV4 addresses to MAC addresses.
C. Provide dynamic IP configuration to network devices.
D. Convert interval private addresses to external public addresses.

Solution: Option B

15. In a network of LANs connected by bridges, packets are sent from one LAN to another through intermediate bridges. Why is the spanning tree algorithm used for bridge routing?
A. For shortest path routing between LANs
B. For avoiding loops in the routing paths
C. For fault tolerance
D. For minimizing collisions

Solution: Option B

16. The subnet mask for a particular network is 255.255.252.0. Which of the following pairs of IP addresses could belong to this network?
A. 172.57.88.62 and 172.57.87.233
B. 10.35.28.2 and 10.35.29.4
C. 191.203.31.87 and 191.234.31.88
D. 128.8.129.43 and 128.8.131.42

Solution: Option D

17. An organization has a class-B network and wishes to form subnets for 24 departments. The subnet mask would be:
A. 255.255.224.0 B. 255.255.240.0 C. 255.255.248.0 D. 255.255.252.0

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Solution: Option C

18. The routing table of a router is shown as below:

Destination	Subnet Mask	Interface
128.75.43.0	255.255.255.0	Eth0
128.75.43.0	255.255.255.128	Eth1
192.12.17.5	255.255.255.255	Eth2
Default		Eth3

On which interface will the router forward packets addressed to destinations 128.75.43.16 and 192.12.17.10 respectively?

A. Eth1 and Eth3 B. Eth0 and Eth3 C. Eth0 and Eth2 D. Eth1 and Eth2

Solution: Option A

19. In IP4 addressing format, the number of networks allowed under Class-C address is:

A. 2^{24} B. 2^{21} C. 2^{8} D. 2^{8}-2

Solution: Option B

20. Suppose a subnet 'X' has a subnet mask 255.255.192.0 and a system A has IP 157.106.46.234. Which of the following belongs to same network A?

A. 157.106.65.03
B. 157.106.142.77
C. Both (A) and (B)
D. None of these

Solution: Option D

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